REMARKS

Favorable reconsideration of this application, in light of the preceding amendments and following remarks, is respectfully requested.

Claims 1, 2, 5-8, 11, 12, 17, 19-21, and 24-30 are pending in this application. Claims 29 and 30 are amended; support for these amendments can be found at least in the Examples 10 and 11 and paragraphs [0043] to [0049] of the specification as filed. Therefore, no new matter is added. Claims 1, 2, 5-8, 11, 12, 17, 19-21, and 24-28 were previously withdrawn. Claims 1, 17, 24 and 29 are the independent claims.

Example Embodiments of the Present Application

Example embodiments recite a method of modulating immunological activities comprising transforming yeast cells with an amino acid sequence including SEQ ID NO.1, expressing a recombinant protein, and orally administering the recombinant protein isolated from the yeast cells or the yeast cell expressing the recombinant protein. Example non-limiting embodiments of this feature are discussed, for example, in paragraphs [0043] to [0049], and FIGS. 1 and 2 of the instant specification.

The SEQ. ID No. 1 has advantages such as efficiently using fungi to produce the fungal immunomodulatory protein (FIP). The conventional method of producing FIP is time-consuming and costly. Yeast is used to produce the FIP in example embodiments, because (a) the yeast and Ling-Zhi both belong to the fungi species, and (b) yeast is safe for direct oral administration without an extraction and purification process. However, when integrating the wild type Ling-Zhi-8 nucleotide codon into yeast, the FIP producing rate is not satisfied and not suitable for massive production, because of the inclination of yeast for a specific codon. Thus, the wild type Ling-Zhi-8

nucleotide codon has been modified in SEQ ID NO. 1 to include the codon that was better expressed in fungi based on its high tRNA translation efficiency.

Further, as seen in example 3, section 73 of the present specification, the improved FIP nucleotide codon, SEQ ID NO:1, can be highly expressed in yeast compared to the original wild type Ling-Zhi-8 nucleotide codon in yeast. After the modification of FIP codon, the FIP can be produced in yeast with better efficiency, and commercial production can be improved.

Rejections under 35 U.S.C. § 102/§103

Claims 29-30 rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Evans et al (US Patent Number 5,928,896, hereinafter "Evans") in light of Murasugi et al. (Journal of Biological Chemistry Vol. 256, No.4, pp2486-2593, 1991, hereinafter "Murasugi"). Applicants respectfully traverse this rejection for the reasons detailed below.

In the Office Action, the Examiner agrees with the Applicants that the nucleotide SEQ ID NO: 1 as recited in claim 29 is not the same as the amino acid sequence disclosed in Murasugi, but states that the claims require the administration of a protein, and not a DNA molecule.

As stated previously, Applicants agree that Murasugi discloses the amino acid sequence of Ling-Zhi-8. However, Applicants maintain the position that the nucleotide SEQ ID NO: 1 as recited in claim 29 is not identical with the sequence disclosed by Murasugi, because the nucleotide SEQ ID NO: 1 is modified to efficiently produce the fungal immunomodulatory protein (FIP).

In addition, Applicants direct the Examiner's attention to Table 1 below.

Table 1

	The present invention	Evans et al	Murasugi et al
Full length of Lin Zhi-8 (or FIP) and transforming a host cell thereby	V (modiflied nucleotide sequence)	X	V
Oral administration of full length LZ-8	V	X (with polymer coated)	X
Oral administration of host cell expressing LZ-8	V	X	X

According to the disclosure of Evans, the oral administration of the immunomodulatory peptide was polymer coated (in column 14, line 66) and the peptide was not a full length immunomodulatory peptide. Applicants submit that one of ordinary skill in the art would know that the oral drug delivery has to overcome the problems of the low pH and digestive enzymes of gastric fluid. However, proteins easily undergo hydrolysis, low permeability to biological membrane barriers and also undesirable stability in the gastrointestinal tract. Accordingly, a coated polymer is used to protect the peptide from degeneration by the enzymes digestion or stomach acid and also to improve the adsorption of the peptide.

Therefore, Applicants submit that neither Evans, Murasugi nor the combination thereof anticipate nor render obvious the limitations of amended claim 29, because Evans utilizes the additional polymer to protect the peptide and did not disclose or imply that the entire Ling-Zhi-8 (or FIP) can be orally administered directly without any forms of protection.

Claim 30, dependent on independent claims 29, is patentable for the reasons stated above with respect to claim 29 as well as for their own merits.

The Applicants, therefore, respectfully request that the rejection to Claims 29-30 under 35 U.S.C. § 102(b) or in the alternative, under 35 U.S.C. § 103(a) be withdrawn.

CONCLUSION

In view of the above remarks and amendments, the Applicants respectfully submit that each of the pending objections and rejections has been addressed and overcome, placing the present application in condition for allowance. A notice to that effect is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Erin G. Hoffman, Reg. No. 57,752, at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By _____

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